

BOOK REVIEW

GERHARD GOTTSBERGER and ILSE SILBERBAUER-GOTTSBERGER. 2006. **Life in the Cerrado: a South American Tropical Seasonal Vegetation Vol 1. Origin and Structure, Dynamics and Plant Use.** (ISBN 3-00-017928-3, hbk.). Reta Verlag, Ulm, Germany. (**Orders:** ilse.silberbauer@uni-ulm.de; Botanischer Garten und Herbarium, Universitaet Ulm, Hans-Kreb-Weg o.n., D-89081 Ulm, Germany). \$64.60, 280 pp., numerous color figures, maps, drawings and tables, 29.5 × 22.5 cm.

The book, *Life in the Cerrado: a South American Tropical Seasonal Ecosystem*, is divided into 21 chapters that cover various topics concerning the following: definition of a cerrado, location, soil types, origin of physiognomy, diversity of flora, life history, and natural and human influences. This book is full of very colorful images, maps, and charts that clearly explain the flora found in the cerrado.

The authors begin by defining the term as a distinct vegetation type that is drastically different from the vegetation found in a typical savanna; these differences are due to its specific ecology, species composition, and floristic diversity. This vegetation is mostly found in central Brazil and has changed continually throughout history. The soil composition varies and has very poorly developed mineral composition. Cerrado soils are well drained, and soil moisture is found to directly influence the distribution of vegetation.

There are five basic cerrado forms, distinguishable by vegetation height and density. In order from tallest/dense to smallest/opn, these are: *cerradão*, cerrado *sensu stricto*, campo cerrado, campo sujo, and campo limpo. Although all five forms exhibit some of the same dominant species, floristic diversity of the entire region varies by locality. Differences can occur over relatively short distances, often abruptly changing from open to more closed canopy forms. Migration of non-cerrado species through the cerrado also occurs, sometimes forming ecotones or transitional areas in the process. The authors note that more studies of floristic diversity are needed in order to fully understand the species composition and geographical regions of the cerrado.

The vegetation of the cerrado consists of trees, lianas, palms, parasitic vines, grasses, and few vascular epiphytes. Trees often appear stunted with thick, fissured, and corky bark and are adapted for rapid growth during early development. They may appear quite old, but longevity of some of the oldest species is a mere 30–40 years. A great number of other plants also exhibit adaptations to cerrado life, many with thickened roots in response to water availability and the high aluminum content of the soil.

Ecological and climate factors that influence the regional flora include soil moisture, nutrient availability, fire, frost, and seasonality. Moisture is often not found until a soil depth of 2.0–2.5 meters. Many plants have evolved longer root systems to obtain this water during the dry season. To combat the nutrient-deficient soil, other plants exploit soil microfauna as a source of nitrogen and phosphorous. Fire provides a mostly positive influence on the cerrado by deterring non-native or invasive species establishment, stimulating flower and fruit production, and aiding in germination and growth of some seedlings. Frost is very similar to fire in that it can damage plants but can also cause plants to invest more in new vegetation with the creation of new leaves. Fire is found throughout the cerrado forms, but frost is considered more of a local phenomenon. The region experiences just two seasons: dry and wet. Flowering and fruiting of different plants is determined by the particular season, and native peoples adapt their diet based on these seasonal patterns.

The cerrado is an economically important region. There are many useful plants found here that provide valuable wood, fruits and seeds, oils, cork, fiber, and pigments. However, the authors mention that more research is needed in order to properly understand the medicinal uses of various plants and the potential economic resources available. Adding to its overall value and importance, this area has also been listed as a top biodiversity hotspot. Sadly, though, the cerrado has drastically decreased in size over the last decade. The authors specifically state that the fate of this pristine area is in the hands of the native population.

This was a very interesting, informative, and well written book that I would highly recommend to anyone interested in neotropical or tropical research or any class that covers South American vegetation or ecosystems. I enjoyed the use of such powerful images, charts, tables, and maps to help better explain the cerrado. The reader will take away a better understanding of the specific vegetation found in this region and the natural and anthropogenic influences that have effected its growth.—Keri McNew, MS Biology, Project Manager, Botanical Research Institute of Texas, 509 Pecan Street, Fort Worth, TX 76102-4060, U.S.A.